

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

# **ENCROACHMENT PERMITS UTILITY & TREE TRIMMING SPECIAL PROVISIONS**

**For Work on  
California  
State Highway  
Rights of Way**



Developed by the Encroachment Permit Branch,  
Caltrans Headquarters, Traffic Operations, June 2006

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1. **AUTHORITY:** The Department's authority to issue encroachment permits is provided under, Div. 1, Chpt. 3, Art. 1, Sect. 660 to 734 of the Streets and Highways Code.
2. **REVOCATION:** Encroachment permits are revocable on five days notice unless otherwise stated on the permit and except as provided by law for public corporations, franchise holders, and utilities. These General Provisions and the Encroachment Permit Utility Provisions are subject to modification or abrogation at any time. Permittees' joint use agreements, franchise rights, reserved rights or any other agreements for operating purposes in State highway right of way are exceptions to this revocation.
3. **DENIAL FOR NONPAYMENT OF FEES:** Failure to pay permit fees when due can result in rejection of future applications and denial of permits.
4. **ASSIGNMENT:** No party other than the permittee or permittee's authorized agent is allowed to work under this permit.
5. **ACCEPTANCE OF PROVISIONS:** Permittee understands and agrees to accept these General Provisions and all attachments to this permit, for any work to be performed under this permit.
6. **BEGINNING OF WORK:** When traffic is not impacted (see Number 35), the permittee shall notify the Department's representative, two (2) days before the intent to start permitted work. Permittee shall notify the Department's Representative if the work is to be interrupted for a period of five (5) days or more, unless otherwise agreed upon. All work shall be performed on weekdays during regular work hours, excluding holidays, unless otherwise specified in this permit.
7. **STANDARDS OF CONSTRUCTION:** All work performed within highway right of way shall conform to recognized construction standards and current Department Standard Specifications, Department Standard Plans High and Low Risk Facility Specifications, and Utility Special Provisions. Where reference is made to "Contractor and Engineer," these are amended to be read as "Permittee and Department representative."
8. **PLAN CHANGES:** Changes to plans, specifications, and permit provisions are not allowed without prior approval from the State representative.
9. **INSPECTION AND APPROVAL:** All work is subject to monitoring and inspection. Upon completion of work, permittee shall request a final inspection for acceptance and approval by the Department. The local agency permittee shall not give final construction approval to its contractor until final acceptance and approval by the Department is obtained.
10. **PERMIT AT WORKSITE:** Permittee shall keep the permit package or a copy thereof, at the work site and show it upon request to any Department representative or law enforcement officer. If the permit package is not kept and made available at the work site, the work shall be suspended.
11. **CONFLICTING ENCROACHMENTS:** Permittee shall yield start of work to ongoing, prior authorized, work adjacent to or within the limits of the project site. When existing encroachments conflict with new work, the permittee shall bear all cost for rearrangements, (e.g., relocation, alteration, removal, etc.).
12. **PERMITS FROM OTHER AGENCIES:** This permit is invalidated if the permittee has not obtained all permits necessary and required by law, from the Public Utilities Commission of the State of California (PUC), California Occupational Safety and Health Administration (Cal-OSHA), or any other public agency having jurisdiction.
13. **PEDESTRIAN AND BICYCLIST SAFETY:** A safe minimum passageway of 4' shall be maintained through the work area at existing pedestrian or bicycle facilities. At no time shall pedestrians be diverted onto a portion of the street used for vehicular traffic. At locations where safe alternate passageways cannot be provided, appropriate signs and barricades shall be installed at the limits of construction and in advance of the limits of construction at the nearest crosswalk or intersection to detour pedestrians to facilities across the street.
14. **PUBLIC TRAFFIC CONTROL:** As required by law, the permittee shall provide traffic control protection warning signs, lights, safety devices, etc., and take all other measures necessary for traveling public's safety. Day and night time lane closures shall comply with the MUTCD and CA Supplement (Part 6, Temporary Traffic Control), Standard Plans, and Standard Specifications for traffic control systems. These General Provisions are not intended to impose upon the permittee, by third parties, any duty or standard of care, greater than or different from, as required by law.
15. **MINIMUM INTERFERENCE WITH TRAFFIC:** Permittee shall plan and conduct work so as to create the least possible inconvenience to the traveling public; traffic shall not be unreasonably delayed. On conventional highways, permittee shall place properly attired flagger(s) to stop or warn the traveling public in compliance with the MUTCD and CA Supplement (Chapter 6E, Flagger Control).
16. **STORAGE OF EQUIPMENT AND MATERIALS:** The storage of equipment or materials is not allowed within State highway right-of-way, unless specified within the Special Provisions of this specific encroachment permit. If Encroachment Permit Special Provisions allow for the storage of equipment or materials within the State right of way, the equipment and material storage shall comply with Standard Specifications, Standard Plans, Special Provisions, and the Highway Design Manual. The clear recovery zone widths must be followed and are the minimum desirable for the type of facility indicated below: freeways and expressways - 30', conventional highways (no curbs) - 20', conventional highways (with curbs) - 1.5'. If a fixed object cannot be eliminated, moved outside the clear recovery zone, or modified to be made yielding, it should be shielded by a guardrail or a crash cushion.
17. **CARE OF DRAINAGE:** Permittee shall provide alternate drainage for any work interfering with an existing drainage facility in compliance with the Standard Specifications, Standard Plans and/or as directed by the Department's representative.
18. **RESTORATION AND REPAIRS IN RIGHT OF WAY:** Permittee is responsible for restoration and repair of State highway right of way resulting from permitted work (State Streets and Highways Code, Sections 670 et. seq.).

19. **RIGHT OF WAY CLEAN UP:** Upon completion of work, permittee shall remove and dispose of all scraps, brush, timber, materials, etc. off the right of way. The aesthetics of the highway shall be as it was before work started.
20. **COST OF WORK:** Unless stated in the permit, or a separate written agreement, the permittee shall bear all costs incurred for work within the State right of way and waives all claims for indemnification or contribution from the State.
21. **ACTUAL COST BILLING:** When specified in the permit, the Department will bill the permittee actual costs at the currently set hourly rate for encroachment permits.
22. **AS-BUILT PLANS:** When required, permittee shall submit one (1) set of as-built plans within thirty (30) days after completion and approval of work in compliance with requirements listed as follows:
1. Upon completion of the work provided herein, the permittee shall send one vellum or paper set of As-Built plans, to the State representative. Mylar or paper sepia plans are not acceptable.
  2. All changes in the work will be shown on the plans, as issued with the permit, including changes approved by Encroachment Permit Rider.
  3. The plans are to be stamped or otherwise noted AS-BUILT by the permittee's representative who was responsible for overseeing the work. Any original plan that was approved with a State stamp, or Caltrans representative signature, shall be used for producing the As-Built plans.
  4. If As-Built plans include signing or striping, the dates of signing or striping removal, relocation, or installation shall be shown on the plans when required as a condition of the permit. When the construction plans show signing and striping for staged construction on separate sheets, the sheet for each stage shall show the removal, relocation or installation dates of the appropriate staged striping and signing.
  5. As-Built plans shall contain the Permit Number, County, Route, and Post Mile on each sheet.
  6. Disclaimer statement of any kind that differ from the obligations and protections provided by Sections 6735 through 6735.6 of the California Business and Professions Code, shall not be included on the As-Built plans. Such statements constitute non-compliance with Encroachment Permit requirements, and may result in the Department of Transportation retaining Performance Bonds or deposits until proper plans are submitted. Failure to comply may also result in denial of future permits, or a provision requiring a public agency to supply additional bonding.
23. **PERMITS FOR RECORD PURPOSES ONLY:** When work in the right of way is within an area under a Joint Use Agreement (JUA) or a Consent to Common Use Agreement (CCUA), a fee exempt permit is issued to the permittee for the purpose of providing a notice and record of work. The Permittee's prior rights shall be preserved without the intention of creating new or different rights or obligations. "Notice and Record Purposes Only" shall be stamped across the face of the permit.
24. **BONDING:** The permittee shall file bond(s), in advance, in the amount set by the Department. Failure to maintain bond(s) in full force and effect will result in the Department stopping of all work and revoking permit(s). Bonds are not required of public corporations or privately owned utilities, unless permittee failed to comply with the provision and conditions under a prior permit. The

surety company is responsible for any latent defects as provided in California Code of Civil Procedures, Section 337.15. Local agency permittee shall comply with requirements established as follows: In recognition that project construction work done on State property will not be directly funded and paid by State, for the purpose of protecting stop notice claimants and the interests of State relative to successful project completion, the local agency permittee agrees to require the construction contractor furnish both a payment and performance bond in the local agency's name with both bonds complying with the requirements set forth in Section 31.02 of State's current Standard Specifications before performing any project construction work. The local agency permittee shall defend, indemnify, and hold harmless the State, its officers and employees from all project construction related claims by contractors and all stop notice or mechanic's lien claimants. The local agency also agrees to remedy, in a timely manner and to State's satisfaction, any latent defects occurring as a result of the project construction work.

25. **FUTURE MOVING OF INSTALLATIONS:** Permittee understands and agrees to rearrange a permitted installation upon request by the Department, for State construction, reconstruction, or maintenance work on the highway. The permittee at his sole expense, unless under a prior agreement, JUA, or a CCUA, shall comply with said request.
26. **ARCHAEOLOGICAL/HISTORICAL:** If any archaeological or historical resources are revealed in the work vicinity, the permittee shall immediately stop work, notify the Department's representative, retain a qualified archaeologist who shall evaluate the site, and make recommendations to the Department representative regarding the continuance of work.
27. **PREVAILING WAGES:** Work performed by or under a permit may require permittee's contractors and subcontractors to pay appropriate prevailing wages as set by the Department of Industrial Relations. Inquiries or requests for interpretations relative to enforcement of prevailing wage requirements are directed to State of California Department of Industrial Relations, 525 Golden Gate Avenue, San Francisco, California 94102.
28. **RESPONSIBILITY FOR DAMAGE:** The State of California and all officers and employees thereof, including but not limited to the Director of Transportation and the Deputy Director, shall not be answerable or accountable in any manner for injury to or death of any person, including but not limited to the permittee, persons employed by the permittee, persons acting in behalf of the permittee, or for damage to property from any cause. The permittee shall be responsible for any liability imposed by law and for injuries to or death of any person, including but not limited to the permittee, persons employed by the permittee, persons acting in behalf of the permittee, or for damage to property arising out of work, or other activity permitted and done by the permittee under a permit, or arising out of the failure on the permittee's part to perform his obligations under any permit in respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work, or other activity or at any subsequent time, work or other activity is being performed under the obligations provided by and contemplated by the permit.

The permittee shall indemnify and save harmless the State of California, all officers, employees, and State's contractors, thereof, including but not limited to the Director of Transportation and the Deputy Director, from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person, including but not limited to the permittee, persons employed by the permittee, persons acting in behalf of the permittee

and the public, or damage to property resulting from the performance of work or other activity under the permit, or arising out of the failure on the permittee's part to perform his obligations under any permit in respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work, or other activity or at any subsequent time, work or other activity is being performed under the obligations provided by and contemplated by the permit, except as otherwise provided by statute.

The duty of the permittee to indemnify and save harmless includes the duties to defend as set forth in Section 2778 of the Civil Code. The permittee waives any and all rights to any type of expressed or implied indemnity against the State, its officers, employees, and State contractors. It is the intent of the parties that the permittee will indemnify and hold harmless the State, its officers, employees, and State's contractors, from any and all claims, suits or actions as set forth above regardless of the existence or degree of fault or negligence, whether active or passive, primary or secondary, on the part of the State, the permittee, persons employed by the permittee, or acting on behalf of the permittee.

For the purpose of this section, "State's contractors" shall include contractors and their subcontractors under contract to the State of California performing work within the limits of this permit.

29. **NO PRECEDENT ESTABLISHED:** This permit is issued with the understanding that it does not establish a precedent.
30. **FEDERAL CIVIL RIGHTS REQUIREMENTS FOR PUBLIC ACCOMMODATION:**  
A. The permittee, for himself, his personal representative, successors in interest, and assigns as part of the consideration hereof, does hereby covenant and agree that:
1. No person on the grounds of race, color, or national origin shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
  2. That in connection with the construction of any improvements on said lands and the furnishings of services thereon, no discrimination shall be practiced in the selection and retention of first-tier subcontractors in the selection of second-tier subcontractors.
  3. That such discrimination shall not be practiced against the public in their access to and use of the facilities and services provided for public accommodations (such as eating, sleeping, rest, recreation), and operation on, over, or under the space of the right of way.
  4. That the permittee shall use the premises in compliance with all other requirements imposed pursuant to Title 15, Code of Federal Regulations, Commerce and Foreign Trade, Subtitle A. Office of the Secretary of Commerce, Part 8 (15 C.F.R. Part 8) and as said Regulations may be amended.
  5. That in the event of breach of any of the above nondiscrimination covenants, the State shall have the right to terminate the permit and to re-enter and repossess said land and the land and the facilities thereon, and hold the same as if said permit had never been made or issued.
31. **MAINTENANCE OF HIGHWAYS:** The permittee agrees, by acceptance of a permit, to properly maintain any encroachment. This assurance requires the permittee to provide inspection and repair any damage, at permittee's expense, to State facilities resulting from the encroachment.
32. **SPECIAL EVENTS:** In accordance with subdivision (a) of Streets and Highways Code Section 682.5, the Department of Transportation

shall not be responsible for the conduct or operation of the permitted activity, and the applicant agrees to defend, indemnify, and hold harmless the State and the city or county against any and all claims arising out of any activity for which the permit is issued.

Permittee understands and agrees that it will comply with the obligations of Titles II and III of the Americans with Disabilities Act of 1990 in the conduct of the event, and further agrees to indemnify and save harmless the State of California, all officers and employees thereof, including but not limited to the Director of Transportation, from any claims or liability arising out of or by virtue of said Act.

33. **PRIVATE USE OF RIGHT OF WAY:** Highway right of way shall not be used for private purposes without compensation to the State. The gifting of public property use and therefore public funds is prohibited under the California Constitution, Article 16.
34. **FIELD WORK REIMBURSEMENT:** Permittee shall reimburse State for field work performed on permittee's behalf to correct or remedy hazards or damaged facilities, or clear debris not attended to by the permittee.
35. **NOTIFICATION OF DEPARTMENT AND TMC:** The permittee shall notify the Department's representative and the Transportation Management Center (TMC) at least 7 days before initiating a lane closure or conducting an activity that may cause a traffic impact. A confirmation notification should occur 3 days before closure or other potential traffic impacts. In emergency situations when the corrective work or the emergency itself may affect traffic, TMC and the Department's representative shall be notified as soon as possible.
36. **SUSPENSION OF TRAFFIC CONTROL OPERATION:** The permittee, upon notification by the Department's representative, shall immediately suspend all lane closure operations and any operation that impedes the flow of traffic. All costs associated with this suspension shall be borne by the permittee.
37. **UNDERGROUND SERVICE ALERT (USA) NOTIFICATION:** Any excavation requires compliance with the provisions of Government Code Section 4216 et. seq., including , but not limited to notice to a regional notification center, such as Underground Service Alert (USA). The permittee shall provide notification at least 48 hours before performing any excavation work within the right of way.

**ENCROACHMENT PERMIT UNDERGROUND UTILITY PROVISIONS**

TR - 0163 (Rev. 05/2006)

**Highway and Freeway encasement requirements for Transverse crossings** of Utility installations, installed by the following methods. The pavement or roadway shall not be open-cut unless specifically allowed under a "UT" permit. Utility installations shall not be installed inside of culverts or drainage structures.

The installation of Uncased High Pressure Natural Gas pipelines, on a case by case basis may be allowed, when in compliance with TR-0158 Special Provisions, "Exception to Policy" for Uncased High Pressure Natural Gas Pipelines.

<b>Encasement Requirements based on: Installation Method, Type of Highway Facility and Material Transported in carrier.</b>						
	Bore and Jack		Directional Drilling		Trenching	
<b>Facility Type</b>	<b>Frwy/Expwy</b>	<b>Conventiona l</b>	<b>Frwy/Expwy</b>	<b>Conventiona l</b>	<b>Frwy/Expwy</b>	<b>Conventional</b>
High Risk (Section 605)	Encase	Encase	Encase	Encase	Encase	Encase
Low Risk (Section 605)	Encase	Encase	Encase	Encase	Encase	Optional
Exempt Facilities (Section 605)	Encase	Encase	Optional	Optional	Optional	Optional
Pressurized Fluids	Encase	Encase	Encase	Encase	Encase	Encase
Natural Gas Lines Minimum 7.5' Depth (Appendix H)	Optional	Optional	Optional	Optional	Optional	Optional
Gravity Flows	Encase	Encase	Encase	Encase	Optional	Optional

Note: "Optional" means at the option of the District Permit Engineer. **Transverse Crossings require encasement.**

**UG 1. CASINGS:**

Casings should be steel conduit with a minimum inside diameter sufficiently larger than the outside diameter of the pipe or ducts to accommodate placement and removal. The casing can be either new or used steel pipe, or an approved connector system. Used pipe shall be pre-approved by the Department's engineer or representative before installation.

When the method of Horizontal Directional Drilling is used to place casing, the use of High Density Polyethylene Pipe (HDPE) as casing is acceptable. In specific instances the approval of Headquarters Office of Encroachment Permits, may be required.

Reinforced Concrete Pipe (RCP) in compliance of State Standard Specifications is an acceptable carrier for storm drain gravity flow or non-pressure flow. RCP when installed by Bore & Jack shall have rubber gaskets at the joints, and holes for grouting of voids left by jacking operations, see "E" below.

- A. All pipes 6" or larger in diameter, or placement of multiple pipes or ducts, regardless of diameters, shall require encasement.
- B. Minimum wall thickness for steel pipe casing for different lengths and diameters of pipes are as follows:

<b>Minimum Wall Thickness</b>		
<b>Casing Pipe (Diameter)</b>	<b>Up to 150 ft (Length)</b>	<b>Over 150 ft (Length)</b>
6" to 28"	1/4"	1/4"
30" to 38"	3/8"	1/2"
40" to 60"	1/2"	3/4"
62" to 72"	3/4"	3/4"

- C. Spiral welded casing is authorized provided the casing is new and the weld is smooth.
- D. The ends of the casing shall be plugged with ungrouted bricks or other suitable material approved by the Department's representative.
- E. When required by the Department's representative, the permittee shall at his expense, pressure grout the area between the pavement and the casing from within the casing in order to fill any voids caused by the work covered under this permit. The increments for grout holes inside the pipe shall be 8' staggered and located 22-1/2 degrees from vertical axis of the casing. Pressure shall not exceed 5 psig for a duration sufficient to fill all voids.
- F. The installation of multiple casings shall be installed with a minimum of 1-1/2 diameter clearance between casings, but not less than 18". The clearance between casings crossing freeways shall be two (2) diameters minimum, but not less than 24".
- G. The casings placed within freeway right-of-way shall extend to the access control lines.
- H. Wing cutters, if used, shall be a maximum of 1" larger than the casing. Voids caused by the use of wing cutters shall be grouted in accordance with "E" above.
- I. A band welded to the leading edge of the casing should be placed square to the alignment. The band should not be placed on the bottom edge. Flaring the lead section on bores over 100' shall not be permitted.
- J. All casing lengths shall equal to the auger length.
- K. The casings within conventional highways shall extend 5' beyond the back of curb or edge of pavement, or to the right of way line if less. Where PCC cross-gutter exists, the casing shall extend at least 5' beyond the back of the cross-gutter, or to the right of way line if less.



**Bore and receiving pits shall be:**

- A. Located at least 10' or more from the edge of pavement on conventional highways in rural areas.
- B. Located 5' behind the concrete curb or AC dike on conventional highways in urban areas.
- C. Located 5' outside the toe of slope of embankment areas.
- D. Located outside freeway right of way.
- E. Adequately fenced and/or have a Type-K barrier placed around them.
- F. Adequately shored in accordance with Cal-OSHA requirements. Shoring for jacking and receiving pits located within 15' of traffic lanes on a State highway shall not extend more than 36" above the pavement grade unless otherwise authorized by Department's representative. Reflectors shall be affixed to the shoring on the sides facing traffic. A 6' chain link fence shall be installed around the perimeter of the pits during non-working hours.
- G. All pits should have crushed-rock and sump areas to clear groundwater and water used to clean the casing. Where ground water is found and pumping is required, the pits shall be lined with filter fabric.

**UG 2. DIRECTIONAL DRILLING:  
Bore and Receiving Pits**

When directional drilling is the approved method for pipe installation, drilling plans shall contain information listed as follows:

- 1. Location of: entry and exit point, access pit, equipment, and pipe staging area.
  - 2. Proposed drill path alignment (horizontal and vertical).
  - 3. Location and clearances of all other facilities.
  - 4. Depth of cover.
  - 5. Soil analysis.\*
  - 6. Carrier pipe length, diameter, thickness, and material (HDPE/steel) and ream pipe diameter.
  - 7. Detailed carrier pipe calculations confirming ability to withstand installation loads and long term operational loads including H2O.
  - 8. Proposed drilling fluid composition, viscosity, and density (based on soils analysis).
  - 9. Drilling fluid pumping capacity, pressures, and flow rates
  - 10. State right-of-way lines, property, and utility right of way or easement lines.
  - 11. Elevations.
  - 12. Type of tracking method/system and accuracy used.
  - 13. A detailed plan for monitoring ground surface movement (settlement or heave) resulting from the drilling operation.
- \* May be waived by the District Permit Engineer for HDD jobs less than 6" in diameter and a traverse crossing less than 150'.

**UG 3. LIMIT OF EXCAVATION:**

No excavation is allowed within 10' from the edge of pavement except in curbed urban areas or as specified in the permit. Where

no curb exists and excavations within 10' of the traveled way are to remain open, a temporary Type-K railing shall be placed at a 20:1 taper or as otherwise directed by the Department.

**UG 4. TUNNELING:**

Review, requirements of Section 623.6 of the Encroachment Permits Manual, if applicable. In addition to the requirements of "UG1" the following requirements apply:

- A. For the purpose of this provision, a tunnel is defined as any pipe, 30" or larger in diameter placed.
- B. When tunneling is authorized, the permittee shall provide full-time inspection of tunneling operations. The Department's representative shall monitor projects.
- C. A survey grid shall be set and appropriately checked over the centerline of the pipe jacking or tunneling operation. Copies of the survey notes shall be submitted to the Department's representative.
- D. Sand shields may be required as ground conditions change.
- E. The method used to check the grade and alignment shall be approved by the Department's representative.
- F. Pressure grouting for liner plates, rib and spiling, or rib and lagging tunnels shall be at every 8' section or at the end of work shift before the next section is excavated. All grouting shall be completed at the end of each workday.
- G. A method for securing the headway at the end of each workday is required. Breastplates shall be installed during working hours for running sand or super-saturated soil.

**UG 5. HIGH AND LOW RISK FACILITIES:**

High and Low Risk Facilities, as defined in the Department's current Manual on High and Low Risk Underground Facilities, shall be installed with a minimum cover of 42".

**UG 6. EXEMPT AND OTHER UNDERGROUND FACILITIES:**

- A. Exempt Facilities:
  - 1. Gas service lines no larger than 2" in diameter or operating at 60 psig or less.
  - 2. ....Underground electrical service conductors with a potential to ground of 300 volts or less.
  - 3. ....Departmental owned electrical systems.
- B. All facilities other than high and low risk shall have a minimum cover of 36" except for service connections, which shall have a minimum cover of 30".

**UG 7. DETECTOR STRIP:**

A continuous metallic detector strip shall be provided with non-metallic main installations. Service connections shall be installed at right angles to the centerline of the State highway where possible.

**UG 8. BACKFILLING:**

All backfilling shall conform to the applicable sections of the Department's Standard Specifications. Ponding or jetting methods of backfilling is prohibited.

Any required compaction tests shall be performed by a certified laboratory at no cost to the Department and the laboratory report furnished to the Department's representative.

#### **UG 9. ROADWAY SURFACING AND BASE MATERIALS:**

When the permit authorizes installation by the open cut method, surfacing and base materials and thickness thereof shall be as specified in the permit.

Temporary repairs to pavements shall be made and maintained upon completion of backfill until permanent repairs are made. Permanent repairs to pavements shall be made within thirty (30) days of completion of backfill unless otherwise specified by the Department. Temporary pavement patches shall be placed and maintained in a smooth riding plane free of humps and/or depressions.

#### **UG 10. DAMAGE TO TREE ROOTS:**

No tree roots over 3" will be cut within the tree drip line when trenching or other underground work is necessary adjacent to roadside trees. The roots that are 3" or more in diameter inside the tree drip line shall be tunneled under and wrapped in burlap and kept moist until the trench is refilled. Trenching machines may not be used under trees if the trunk or limbs will be damaged by their use.

If the trees involved are close together and of such size that it is impractical to protect all roots over 3" in diameter, or when roots are less than 4" in diameter, outside tree drip line, special arrangements may be made whereby pruning of the tree tops to balance the root loss can be done by the permittee under the close supervision of the District Landscape Specialist or District Tree Maintenance Supervisor. Manholes shall not be installed within 20' of any trunk.

#### **UG 11. PIPES ALONG ROADWAY:**

Pipes and conduits paralleling the pavement shall be located as shown on the plans or located outside of pavement as close as possible to the right-of-way line.

#### **UG 12. BORROW AND WASTE:**

Borrow and waste will be allowed within the work limits only as specified in the permit.

#### **UG 13. MARKERS:**

The permittee shall not place any markers that create a safety hazard for the traveling public or departmental employees.

#### **UG 14. CATHODIC PROTECTION:**

The permittee shall perform stray current interference tests on underground utilities under cathodic protection. The permittee shall notify the Department prior to the tests. The permittee

shall perform any necessary corrective measures and advise the Department.

#### **UG 15. TIE-BACKS:**

A. Tie-backs shall be placed for the sole purpose of supporting shoring and/or soldier piles placed outside State highway rights-of-way to facilitate permittee's excavation.

B. Tiebacks shall be disconnected from the shoring and/or soldier piles one (1) year prior to releasing the bond.

#### **UG 16. INSTALLATION BY OPEN CUT METHOD:**

When the permit authorizes installation by the open cut method no more than one lane of the highway pavement shall be open-cut at any one time. Any exceptions shall be in writing by the Department's representative. After the pipe is placed in the open section, the trench is to be backfilled in accordance with specifications, temporary repairs made to the surfacing and that portion opened to traffic before the pavement is cut for the next section.

If, at the end of the working day, backfilling operations have not been properly completed, steel plate bridging shall be required to make the entire highway facility available to the traveling public in accordance with the Steel Plate Bridging Special Provisions (TR-0157)

#### **UG 17. PAVEMENT REMOVAL:**

PCC pavement to be removed shall be saw cut at a minimum depth of 4" to provide a neat and straight pavement break along both sides of the trench. AC pavement shall be saw cut to the full depth.

Where the edge of the trench is within 2' of existing curb and gutter or pavement edge, the asphalt concrete pavement between the trench and the curb or pavement edge shall be removed.

#### **UG 18. MAINTAIN ACCESS:**

Where facilities exist (sidewalks, bike paths), a minimum width of 4' shall be maintained at all times for safe pedestrian and bicyclist passage through the work area.

#### **UG 19. SIDES OF OPEN-CUT TRENCHES:**

Sides of open cut trenches in paved areas shall be kept as nearly vertical as possible. Trenches shall not be more the 2' wider than the outside diameter of the pipe to be laid therein, plus the necessary width to accommodate shoring.

#### **UG 20. EXCAVATION UNDER FACILITIES:**

Where it is necessary to excavate under existing curb and gutter, or underground facilities, the void shall be backfilled with two (2) sack cement-sand slurry.

#### **UG 21. PERMANENT REPAIRS TO PCC PAVEMENT:**

Repairs to PCC pavement shall be made of Portland Cement Concrete containing a minimum of 658 lbs. or 7 sack of cement per cubic yard. Replaced PCC pavement shall equal existing

pavement thickness. The concrete shall be satisfactorily cured and protected from disturbance for not less than forty-eight (48) hours. Where necessary to open the area to traffic, no more than two (2%) percent by weight of calcium chloride may be added to the mix and the road opened to traffic after six (6) hours.

**UG 22. REMOVAL OF PCC SIDEWALKS OR CURBS:**

Concrete sidewalks or curbs shall be saw cut to the nearest score marks and replaced equal in dimension to that removed with score marks matching existing sidewalk or curb.

**UG 23. SPOILS:**

No earth or construction materials shall be dragged or scraped across the highway pavement, and no excavated earth shall be placed or allowed to remain at a location where it may be tracked on the highway traveled way, or any public or private approach by the permittee's construction equipment, or by traffic entering or leaving the highway traveled way. Any excavated earth or mud so tracked onto the highway pavement or public or private approach shall be immediately removed by the permittee.

## **ENCROACHMENT PERMIT OVERHEAD UTILITY PROVISIONS**

TR - 0162 (Rev. 05/2006)

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### **OH1. LOCATION POLE LINES, ETC.:**

Pole lines shall be located as specifically directed in the provisions of the permit.

### **OH2. INSTALLATIONS AND CLEARANCES:**

Horizontal clearances, as measured from the edge of traveled way to the installation, shall be in accordance with the minimum desirable clear recovery zone for a conventional highway which is 20'. In no case is a pole allowed closer than 1.5' behind a curb face or less than 2' from the edge of a slope catch point or a driveway, or within a drainage ditch. New installations should adhere to setback limits or should be protected. Consideration should be given to placing such encroachments underground in shoulder or parking areas. Also, installations and clearances shall comply with applicable orders of the Public Utilities Commission of the State of California, or the California Occupational Safety and Health (CAL-OSHA) Safety Orders, whichever is greater.

### **OH3. PERMISSION FROM PROPERTY OWNERS:**

Whenever necessary to secure permission from abutting property owners, such authority must be secured by the permittee before starting work.

### **OH4. CLEARANCE OF TREES:**

Unless otherwise specifically required by the Department, protected cables, tree wires or plastic tree wire guards used for communication lines may be used through trees where necessary, provided the installation and any necessary pruning does not damage or affect the appearance of the tree or the tree itself will not be damaged. This allowance does not apply to scenic highways.

### **OH5. GUY WIRES:**

No guy wires are to be attached to trees except as may be specified in the permit and in no event

shall they be so attached as to girdle the tree or interfere with its growth. Guy wires shall be kept to a minimum elevation above ground as directed.

### **OH6. ANCHOR:**

No anchor shall be placed closer to the traveled way than the pole itself.

### **OH7. REMOVE OLD POLES, GUY, and STUBS:**

The entire length of poles and stubs shall be removed from the ground and the holes backfilled. Guy rods shall be removed to a minimum depth of 3' below original ground.

### **OH8. AERIAL CROSSING:**

No work involving new or additions to existing aerial crossings shall be performed in rainy, foggy or inclement weather which creates hazardous conditions for highway users.

### **OH9. CLEARANCE FROM CURBS:**

The face of poles shall not be placed closer than 1.5' from any curb face.

### **OH10. POLE INSTALLATION OR REMOVAL:**

Where poles are to be installed or removed behind the curb in a parkway that is paved with Portland Cement Concrete, the concrete shall be saw cut, removed and replaced to the nearest score lines or expansion joints. The hole in the PCC sidewalk created by pole removal shall be temporarily backfilled with 2" minimum temporary AC at the time the pole is removed. Poles are not to be installed without prior approval of the final location by the Department's field representative.

### **OH11. FREEWAY INSTALLATION:**

Poles, anchors, etc., shall not be installed inside of any fenced freeway right of way.

## ENCROACHMENT PERMIT UTILITY MAINTENANCE PROVISIONS

TR - 0161 (Rev. 05/2006)

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Any public utility or public corporation who lawfully maintains a utility encroachment, or their agent, may perform routine or emergency maintenance on such facility in accordance with the following provisions (unless updated at some future time, thence the future provisions shall govern.

### UM1. EXCLUSIONS:

These provisions do not authorize tree trimming, work on freeways, expressways, or other activities not specifically provided for in this permit.

### UM2. POSSESSION OF PERMIT REQUIRED:

The permit or a copy thereof shall be kept at the site of the work and must be shown to any Departmental representative or any law enforcement officer on demand. WORK SHALL BE SUSPENDED IF PERMIT IS NOT AT WORK SITE AS REQUIRED.

### UM3. NOTICE REQUIRED:

The permittee shall notify the Department's representative and the Transportation Management Center (TMC) 7 days before initiating a lane closure. A confirmation notification should occur 3 days before closure. In emergency, situations that may impact traffic, TMC and the Department's representative shall be notified as soon as possible.

### UM4. STANDARD OF WORK:

All work shall conform to recognized standards of utility construction and the Department's current Standard Specifications.

### UM5. EMERGENCY REPAIRS:

The permittee may make emergency repairs, alter traffic flow, and excavate through improved surfaces only when breaks in the conduit, cable or pipeline over or under the pavement present a definite public hazard or serious interruption of essential service. In such cases, the Department's representative shall be notified immediately.

### UM6. OPEN EXCAVATIONS:

No excavation shall be left open after daylight hours unless specifically authorized and adequate protection for traffic is provided in accordance with the General Provisions "Protection of Traffic."

Backfill and pavement replacement shall be performed in accordance with the applicable General Provisions (i.e., "Restoration and Repairs in Rights of Way").

### UM7. SERVICE CONNECTION:

These provisions do not authorize installation of conduit, cable, gas, or water service connections within State rights of way, regardless of the location of the main, existing conduit, or cable. All new underground or pipe abandon services must be covered by individual permits. See Section "OH 4" regarding service connections for aerial wires.

### UM8. ROUTINE INSPECTION AND MAINTENANCE:

#### 1. Routine Maintenance and Inspection:

Roadbed work shall be conducted between 9:00 a.m. and 3:00 p.m., or as otherwise authorized, in writing, by the Department's representative.

#### 2. Manholes:

The permittee may open existing manholes to repair underground cables. Where the manhole lies within the improved surface of the highway, the permittee will provide adequate protection for traffic in accordance with the General Provisions "Public Traffic Control".

#### 3. Excavations:

Routine inspection and repair of pipeline and cables shall:

- A. Not be made in improved surfaces, landscaped areas or closer than 10' to the edge of the pavement without a special permit; and
- B. Not uncover more than 50' of line at any one time.

#### 4. Pole Lines:

Permittee is authorized to:

- A. Stub, or reset existing pole, provided no change in location of pole or anchor is made. Stubs and anchors must not be placed between existing pole and traveled way.

- B. Replace poles, guy poles, and crossarms in same location limited to two (2) consecutive poles. No additional poles or
- C. Replace broken pins and/or insulators, repair broken wires, pull slack wires, and replace or pull broken or slack guys.
- D. Repair and complete transfer work on existing aerial cables.
- E. Install new and replace existing transformers on existing poles.
- F. Replace aerial wires and crossarms on existing poles except where wires cross the highway. Unless otherwise specifically required by the Department, protected cable, tree wire or plastic tree wire guard used for communication lines may be used through trees where necessary, provided the appearance of the tree or the tree itself will not be damaged.

guy poles are authorized under this routine maintenance provision.

***This section (F) does not apply to scenic highways.***

- G. Installations and clearances shall be equal to those required by either the California Public Utilities Commission Orders or the California Occupational Safety and Health (CAL-OSHA) Safety Orders, whichever is greater. ***Also see "OH 2" of the Overhead Utility Provisions.***
- H. Clear grass from around base of poles and excavate around poles for inspection, including tamping and straightening. The use of herbicides or other chemicals is not authorized by this permit. A separate encroachment permit must be applied for and issued for that purpose.

**ENCROACHMENT PERMIT ANNUAL UTILITY PROVISIONS**

TR - 0160 (Rev. 05/2006)

Any public utility or public corporation who lawfully maintains a utility encroachment, or their agent, may perform routine or emergency maintenance on such facility in accordance with the following provisions:

**UE1. EXCLUSIONS:** These provisions do not authorize tree trimming, work on freeways, expressways, aerial capacity increases on designated "Scenic Highways," or other activities not specifically provided for in this permit.

**UE2. POSSESSION OF PERMIT REQUIRED:** The permit or a copy thereof shall be kept at the work site and must be shown to any Departmental representative or any law enforcement officer on demand. **WORK SHALL BE SUSPENDED IF PERMIT IS NOT AT JOB SITE AS REQUIRED.**

**UE3. NOTICE REQUIRED:** The permittee shall notify the Department's representative and the Transportation Management Center (TMC) 7 days before initiating a lane closure. A conformation notification should occur 3 days before closure. In emergency situations that may impact traffic, TMC and the Department's representative shall be notified as soon as possible.

**UE4. STANDARDS OF WORK:** All work shall conform to recognized standards of utility construction and Department's current Standard Specifications.

**UE5. EMERGENCY REPAIRS:** The permittee may make emergency repairs, alter traffic flow, and excavate through improved surfaces only when breaks in the conduit, cable, or pipeline over or under the pavement presents a definite public hazard or serious interruption of essential services. In such cases, the Department's representative shall be notified immediately.

**UE6. OPEN EXCAVATIONS:** No excavation shall be left open after daylight hours unless specifically authorized and adequate protection for traffic is provided in accordance with General Provisions, "Public Traffic Control." Backfill and pavement replacement shall be performed in accordance with General Provisions, "Restoration and Repairs in Rights of Way."

**UE7. TRAFFIC CONTROL HOURS:** Work requiring traffic control shall be conducted between 9:00 a.m. and 3:00 p.m. or as otherwise authorized by the Department's representative.

**UE8. WORK PERMITTED --AERIAL:**

1. Install additional capacity (in the same location), except facilities over the traveled way, on designated "Scenic Highways," or on Structures.
2. Maintain, inspect, remove, repair or replace (in the same location) all aerial facilities except over the traveled way or on Structures. Permittee is authorized to clear grasses from around base of poles and excavate around poles for inspection, including tamping and straightening. This permit does not authorize the

use of herbicides or other chemicals. A separate encroachment permit must be applied for and issued for those purposes.

3. Perform insulator washing and interconnect splicing of cables.
4. Install or remove service connections with potential to ground of 300 volts or less, except over the traveled way.
5. Install, maintain, remove, repair or replace aerial service connections with potential to ground of 300 volts or less, except over the traveled way, unless specifically stated in permit.
6. Installations and clearances shall be equal to those required by either the State of California Public Utilities Commission orders or the California Occupational Safety and Health Regulations (CAL-OSHA), Division of Industrial Safety, Safety Orders, promulgated in the California Code of Regulations, Title 8, Chapter 4, whichever is greater.

**UE9. WORK PERMITTED --UNDERGROUND:**

1. Maintain, inspect, remove, repair or replace (in the same location) all underground facilities except those requiring trenching in the traveled way.
2. Install additional capacity in existing ducts except for facilities not in compliance with the Department's current "Manual on High and Low Risk Facilities within Highway Rights of Way" or on Structures.
3. Install air flow monitoring transducers and piping in existing ducts.
4. Barholing, potholing, cleaning, rodding and placing float ropes.
5. Adjust access cover to grade and replace in kind or with larger size pull boxes.
6. Interconnect splicing of cables.
7. Install service connections perpendicular to the highway using either directional drilling, jacking and boring, or trenching methods as determined by the District Permit Engineer. Electrical service is restricted to a potential to ground of 300 volts or less. Gas and domestic water services are restricted to 2" in diameter or less.
8. Permanent pavement patching for work authorized by this permit.

**UE10 FAILURE TO COMPLY:** Failure to comply with the terms and conditions above shall be grounds for permit revocation.

## **ELECTRIC UTILITY TREE PRUNING AND REMOVAL SPECIAL PROVISIONS**

TR – 0159 (Rev. 05/2006)

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These special provisions are intended for tree pruning purposes done by Electrical Utility owners or their contractors. These special provisions are not intended for use in conjunction with encroachment permits issued for outdoor advertising or for non-utility tree pruning.

### **I. GENERAL**

- A. In partnership with Caltrans, this permit shall not restrict an Electric Utility owner from complying with applicable California Public Resources Codes, California Public Utility Commission (CPUC) General Orders, and other Federal, State, or local laws that require clearances between vegetation and energized power lines.

**Work may only be performed by the contractor(s) listed on this permit, or contractor(s) who have obtained a Double Permit (DP) in conjunction with the utility owner's permit.**

- B. This permit authorizes the pruning/removal of trees located on State rights-of-way, and/or access onto the State rights-of-way to the location for pruning/removal of trees that are located outside of the State rights-of-way.
- C. Scheduling of work may be restricted by Caltrans. Traffic volumes for special events, commute traffic and other high volume traffic flows may restrict pruning hours and/or days.
1. Traffic control is generally authorized from 9 a.m. to 3 p.m., Monday through Friday, excluding holidays. Extended hours for traffic control, may be authorized by Caltrans.
  2. All traffic control shall conform to State Standard Plan requirements. When required, the use of a flashing arrow board is MANDATORY.
- D. All debris, cuttings and/or tree limbs shall be removed from State rights-of-way, and the work area must be left in a safe and presentable condition at the end of each workday. In areas where the spread of disease or insects is a concern, tree limbs and wood shall be disposed in accordance with requirements of Federal, State and local agencies. When approved by Caltrans, clean loads of wood chips may be placed only at designated locations within the State rights-of-way, so as not to create a fire hazard, attract illegal dumping or obstruct drainage ditches or inlets.
- E. All pruning shall be in compliance with ANSI A300-1995, the American National Standard for Tree Care Operations. Tree, Shrub and Other Woody Plant Maintenance-Standard Practices and the International Society of Arboriculture (ISA) Tree-Pruning Guidelines, 1995 or subsequent versions thereof.
- F. All operations of work shall be suspended during inclement weather or fog when lane or shoulder closures are needed to perform the work. No work is allowed during periods of high winds that could spread debris into the traveled way.



- G. The Caltrans Maintenance Landscape Specialist may communicate the location of specific trees which are considered of high value because of their local community significance, historic landscape potential, or documented horticultural value. The Electric Utility owner may be required to limit the amount of foliage removed from these high value trees in order to preserve their structure and appearance.

## **II. TREE PRUNING**

In addition to the ANSI A300 standards and the ISA Tree Pruning Guidelines, the following requirements shall be followed:

- A. Directional pruning as defined in the ISA Tree-Pruning Guidelines may be performed on trees which will be pruned for the first time or trees which have had some pruning in the recent past. Trees which cannot be directionally pruned, may be submitted for consideration of removal.
- B. Initial severe “V” shaped directional pruning may be performed on trees only after review of the trees by Caltrans. Prior approval shall be obtained from the Caltrans District Landscape Specialist or Caltrans District Landscape Architect. Severe “V” directional pruning on any tree species along state or federal designated scenic highways requires review and approval from the Caltrans District Landscape Architect.
- C. Previously “rounded over” trees shall be maintained as in the past unless Caltrans and the Electric Utility owner determine the tree can be directionally pruned or the crown restored without causing structural defects that may cause the new growth to present a liability.
- D. Minimum clearances established by the CPUC General Orders, California Public Resources Code and other Federal and State laws must be adhered to. The amount of clearance beyond the established minimum shall be determined by Caltrans and the Utility company. The Utility company shall furnish the Caltrans district representative current CPUC and/or other regulatory agencies minimum clearance standards. For most locations, where conditions allow, a minimum pruning frequency should be established that would not require additional pruning for one year. Consideration shall be given to the species, health, growth habit and condition of each tree when determining the amount to prune. Branches should be cut to laterals or the parent branch and not at a pre-established clearing limit.
- E. Under most conditions, trees may be pruned during any season of the year. The timing of pruning of host trees (eucalyptus, pine, and elm) in areas of known disease or insect infestations may be restricted unless the specific host trees are not in compliance with California Public Resources Codes, CPUC General Orders and other Federal, State, or local laws, or if an immediate hazard exists to public safety.

## **III. TREE REMOVAL**

Only trees which do not require replacement, compensation or mitigation planting may be removed under this permit.

- A. Volunteer growth from stumps and seedlings growing directly under the electrical lines which will ultimately grow into the electrical lines and have little or no value to the desired condition of the roadside may be removed without additional Caltrans approval.

Note: Seedlings are less than 4” in diameter, and less than 20’ tall.

- B. Caltrans approval is required where clear cutting of all growth under the electrical lines is desired. Groups of seedlings or volunteer growth that provides a visual screen for adjacent development shall not be removed without review by Caltrans District Landscape Architect.
- C. A Caltrans District Landscape Specialist may approve other tree removals when one of the following criteria are met:
1. Any tree which, by mutual agreement, is a potential hazard that should be removed, such as; leaning, uprooted, or dead trees. Replacement trees, compensation or mitigation plantings are not required.
  2. Trees which have low species value or trees in obviously poor condition due to poor health, or severe structural defects, and which are not of high value, provide a highway screen, wildlife habitat or other landscape function. (The Western Chapter, International Society of Arboriculture Species Classification and Group Assignment pamphlet may be used as a reference to determine low species value.) Replacement trees, compensation or mitigation planting are not required.

Prior to tree removals under Section C, a Caltrans/Electric Utility Tree Removal Request shall be completed, signed by the Electric Utility Company authorized representative, and submitted to the Caltrans District Landscape Specialist. At least one legible photograph showing the tree(s) to be removed shall be provided by the Electric Utility Company and submitted with the tree removal request.

Trees shall not be removed until the Caltrans District Landscape Specialist approves and signs the Tree Removal Request. The Electric Utility Owner shall have a copy of the approved Tree Removal Request at the work site during removal operations.

- D. Removals requiring compensation, replacement trees or mitigation planting:

Compensation, replacement trees, or mitigation planting shall be required for trees of high value, with a historic landscape potential, trees which provide a highway screen, wildlife habitat, or other landscape function. Trees which require replacement, mitigation planting or compensation SHALL REQUIRE A SEPARATE PERMIT and approval by the District Landscape Architect. (The Western Chapter, International Society of Arboriculture Species Classification and Group Assignment Pamphlet may be used as a reference to determine high species value.)

#### **IV. CHEMICAL CONTROL**

- A. Upon approval by Caltrans to use chemicals, the electric utility owner shall also obtain approval by the County Agricultural Commissioner.
- B. Control of resprouting tree species shall be conducted using an integrated vegetation management program, which includes chemical and non-chemical methods.
- C. A pest control recommendation from a licensed Pest Control Advisor must be obtained, and a copy of the recommendation must be submitted to the State Landscape Specialist prior to chemical application.

**ENCROACHMENT PERMIT - UNCASSED HIGH PRESSURE NATURAL GAS PIPELINE****SPECIAL PROVISIONS**

TR-0158 (Rev 05/2006)

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In accordance with the Departments Encroachment Permits Manual, Section 623, requires that all new pipeline installations with a diameter of six inches or greater and transversely cross a State highway rights-of-way shall be encased.

In compliance with Memorandum dated November 9, 1994, "Exception to Policy" - Uncased High-pressure Natural Gas Pipelines. The Department will allow the installation of uncased natural gas pipelines crossings in specific circumstances. The Departments primary concerns are for public safety, the integrity of the highway facility and the mechanical protection of the pipeline itself. It is necessary to limit the number of requests for transverse natural gas transmission pipeline crossings, without casings, to locations where the following conditions are met:

**UNG 1.**

The pipeline owner agrees that the crossing will be designed for construction in accordance with the Code of Federal Regulations, Title 49, Part 192, and/or the California Public Utilities Commission General Orders No. 112-D with respect to natural gas pipelines. The crossing design shall be comprehensive in all respects including but not limited to " material specification, pipe wall thickness determination, coating selection, and cathodic protection. Soil conditions at each site shall be analyzed for characteristics that may prove harmful to the protective pipe coating. This analysis shall be used by the pipeline owner in selecting a protective pipe coating sufficient to withstand the potential for gouging or peeling during the boring and jacking operation, or other methods approved by Caltrans. The final condition of the coating will be determined by the pipeline owner through monitoring of the boring and jacking operation, visually inspecting the exiting initial pipe segment, and electrical testing by an engineer or technician with expertise in cathodic protection. The test data shall be noted on the as-built drawings. Remedial action will be taken if the condition of the coating is such that cathodic protection is not practical.

**UNG 2.**

The minimum depth of cover within State highway right of way, from the final ground line (finished grade or original ground) to the top of the proposed gas carrier pipeline, is 7.5'. If the location is such that it is not practical to achieve the above depth of cover, then an engineered protective cover (such as a reinforced concrete structure) may be provided outside of pavement areas in lieu of casing. At no time shall the minimum depth of cover be less than 42".

**UNG 3.**

The permit specifies that the uncased gas carrier pipeline shall, as a minimum, be designed for a Class 3 Location (Code of Federal Regulations referenced above) for hard surfaced roads, highways, public streets, and railroads. (See attached Excerpts from the Code of Federal Regulations, Design Factor to be Used for Natural Gas Pipelines.)

**UNG 4.**

The existence of the crossing is adequately identified by signing at the right-of-way line, with at least one identifying sign, which is visible from the roadway in each direction of travel.

**UNG 5.**

The pipeline owner agrees to provide as-built drawings at completion of the pipeline crossing, with a letter certifying that the pipeline was installed properly and in accordance with the permit plans (including approved changes to the permit plans), and meets industry and regulatory standards for such installation.

**UNG 6.**

All other applicable requirements of Section 623 of the Encroachment Permits Manual are satisfied.

**UNG 7.**

All permit applications requesting installations of such uncased natural gas pipeline crossings six inches or larger in diameter and meeting the above requirements may be approved by the highway district. All permit applications for uncased pipeline crossings deviating from the above requirements shall be submitted to the Chief of the Office of Project Planning and Design for exception approval in the usual manner.

## **EXCERPTS FROM CODE OF FEDERAL REGULATIONS**

### **DESIGN FACTORS TO BE UTILIZED FOR NATURAL GAS PIPELINES**

In the design of steel natural gas pipelines the Minimum Yield Strength for the grade of steel used is reduced by a Design Factor (F). This Design Factor is determined by the type of road being crossed by the pipeline and a Class Location established by Code of Federal Regulations, Title 49, Part 192 (Office of the Federal Register, 1990)

The Class Location depends on the occupancy of buildings or activities within an area that extends 660 feet from either side of the pipeline centerline for a continuous 1 mile segment of the pipeline. There are four Class Locations as follows:

Class 1. A location that has 10 or less buildings intended for human occupancy.

Class 2. A location that has more than 10 but less than 46 buildings intended for human occupancy.

Class 3. a) Any location that has 46 or more buildings intended for human occupancy; or

b) Area where pipeline lies less than 300 feet of either a building or a small well defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days or weeks need not to be consecutive).

Class 4. Location where buildings of four or more stories are prevalent.

The design factor used for a specific Class Location also depends on the kind of road involved as indicated on the following Table.

**DESIGN FACTOR (F)**

<b>TYPE OF THOROUGHFARE</b>	<b>CLASS LOCATION</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Privately owned roads	0.72	0.60	0.50	0.40
Unimproved public roads	0.60	0.60	0.50	0.40
Hard surfaced roads, highways public streets, and railroads	0.60	0.50	0.50	0.40

**Example:** A pipe made of X42 grade of steel which has a Minimum Yield Strength (MYS) of 42,000 psi used in a Class 4 location at a hard surface road crossing would be designed using a reduced Minimum Yield Strength, by applying a Design Factor of 0.4, of 16,800 psi.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**ENCROACHMENT PERMIT STEEL PLATE BRIDGING UTILITY PROVISIONS**

TR -0157 (Rev. 05/2006)

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To accommodate excavation work, steel plate bridging may be necessary. All conditions for use of steel plate bridging should be set forth in the special provisions.

Consideration of steel plate bridging should take into account the following factors:

1. Traffic volume and composition.
2. Duration and size of the proposed excavation.
3. Weather conditions.

When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal, cannot be properly completed within a work day, steel plate bridging with a non-skid surface and shoring (see Trenching & Shoring) may be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

1. Steel plate bridging on freeways is not allowed.
2. Steel plates used for bridging must extend a minimum of 12" beyond the edges of the trench.
3. Steel plate bridging shall be installed to operate with minimum noise.
4. The trench shall be adequately shored, as mentioned in Section 516.10, to support the bridging and traffic loads.
5. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates, if plate installation by Method (2) described below, is used.
6. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.

As required by the district, steel plate bridging and shoring shall be installed using either Method (1) or (2):

**Method 1** [For speeds greater than 45 mph]:

The pavement shall be cold planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate.

**Method 2** [For Speeds less than 45 mph]:

Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 2" into the pavement. Subsequent plates are butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope 8.5 % with a minimum 12" taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry or an equivalent slurry that is satisfactory to the Caltrans' representative.

The contractor is responsible for maintenance of the steel plates, shoring, asphalt concrete ramps, and ensuring that they meet minimum specifications. Unless specifically noted in the special provisions, or approved by the State representative, use of steel plate bridging should not exceed 4 consecutive working days in any given week. Backfilling of excavations shall be covered with a minimum 3" temporary layer of cold asphalt concrete.

The following table shows the advisory minimal thickness of steel plate bridging required for a given trench width (A-36 grade steel, designed for HS20-44 truck loading per Caltrans Bridge Design Specifications Manual).

**Trench Width****Minimum Plate Thickness**

10"	1/2"
1'-11"	3/4"
2'-7"	7/8"
3'-5"	1"
5'-3"	1 1/4"

NOTE: For spans greater than 5'-3", a structural design shall be prepared by a California registered civil engineer.

All steel plates within the right of way whether used in or out of the traveled way shall be without deformation. Inspectors can determine the trueness of steel plates by using a straight edge and should reject any plate that is permanently deformed.

Steel plates used in the traveled portion of the highway shall have a surface that was manufactured with a nominal Coefficient Of Friction (COF) of 0.35 as determined by California Test Method 342 (See Appendix H, Encroachment Permits Manual). If a different test method is used, the permittee may utilize standard test plates with known coefficients of friction available from each Caltrans District Materials Engineer to correlate skid resistance results to California Test Method 342. Based on the test data, the permittee shall determine what amount of surface wear is acceptable, and independently ascertain when to remove, test, or resurface an individual plate.

Caltrans Inspectors should not enforce plate removal unless it is permanently deformed or delivered without the required surfacing. However, an inspector should document in a diary all contacts with the contractor.

A Rough Road sign (W33) with black lettering on an orange background may be used in advance of steel plate bridging. This sign is used along with any other required construction signing.

Surfacing requirements are not necessary for steel plates used in parking strips, on shoulders not used for turning movements, or on connecting driveways, etc., not open to the public.